Space Weather Forecast

Issued on Friday, 04 February 2022 at 01:20 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of Moderate flares throughout. Chance of isolated Minor Storm activity, mainly tomorrow.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Low with several small common class flares observed. There are currently five numbered sunspot regions spread across the visible disc, with also a new, small and simple and yet to be numbered region in the southern hemisphere. Most of the numbered regions are relatively magnetically complex, especially AR2936 and possibly also new region AR2941. This region is currently rotating into view from the northeast limb and is potentially significant. No Earth-directed coronal mass ejections (CMEs) were observed in available imagery in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind, as observed at L1, reflects the current influence of the CME which left the Sun on the 29th January. Solar winds have been at slightly elevated to elevated levels, peaking at 576 km/s at 03/1319 UTC. The strength of the magnetic field was moderate initially then became strong after 03/0430 UTC, then declined to become predominantly weak from late morning. The important north-south component of the magnetic field was initially positive, but then became strongly negative between approximately 03/0700-0930 UTC, after which time it became positive and then generally remained that way. Geomagnetic activity was initially Quiet but quickly increased. Early indications showed that Minor Geomagnetic storm levels were reached, but subsequent data from the British Geological Society showed that in fact Moderate geomagnetic storm levels where reached 03/0600-1200 UTC, with unsettled to active conditions following for the rest of the day.

Energetic Particles / Solar Radiation: The count of energetic particles (high energy protons) was at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low, with a continued chance (30%) of Moderate-class flares and a slight chance (5%) of a strong flare.

Solar Wind / Geomagnetic Activity: Solar winds will probably remain elevated for much of today, with a chance of briefly becoming strong. Tomorrow (5th) the solar wind may temporarily decrease to slightly elevated levels, before returning to elevated levels as coronal hole influence arrives. This is most likely to occur tomorrow morning. Through day 3 (6th) the solar wind is expected to gradually decline to slightly elevated levels, then possibly down to background levels by late day 4 (7th). Quiet to Unsettled geomagnetic activity is expected throughout, with occasional Active intervals today, tomorrow and day 3 (6th). There is also a chance (30%) of a Minor Storm interval today and also day 3 (20%), but especially tomorrow (50%).

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Met Office Space Weather Forecast

Energetic Particles / Solar Radiation: The count of energetic particles (high energy protons) is forecast to remain at background levels whilst the current sunspots remain quiet and stable, with no radiation storms currently expected.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	30	50	20	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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